

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/049876 A1

(51) International Patent Classification⁷: **A47D 13/02**

(21) International Application Number:
PCT/SE2003/001758

(22) International Filing Date:
13 November 2003 (13.11.2003)

(25) Filing Language: Swedish

(26) Publication Language: English

(30) Priority Data:
0203533-5 29 November 2002 (29.11.2002) SE

(71) Applicant (for all designated States except US): **BABY
BJÖRN AB** [SE/SE]; P.O. Box 4630, S-182 15 Danderyd
(SE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BERGKVIST, Håkan**
[SE/SE]; Beckomberga vägen 72, S-168 54 Bromma (SE).

(74) Agents: **SUNDSTRÖM, Per et al.**; Stenhagen Patentbyrå
AB, P.O. Box 4630, S-116 91 Stockholm (SE).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

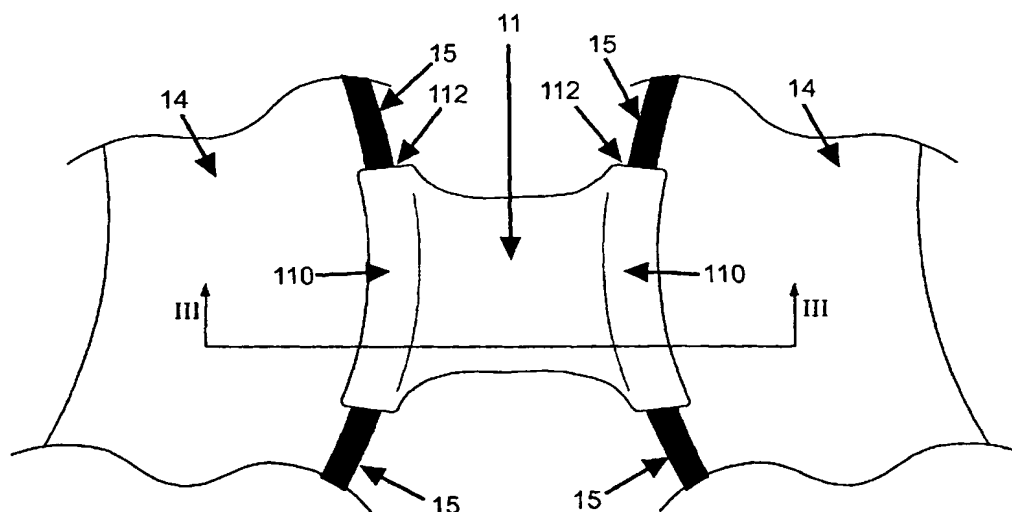
(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,

[Continued on next page]

(54) Title: A CHILD HARNESS



(57) Abstract: A child harness that includes two strap loops (10) which pass around respective shoulders of the wearer and which are mutually connected by means of a fastener means (11) on the rear side of the harness. The harness also includes a child carrying pouch on the front side of the harness, so as to be supported on the chest side of the wearer. The fastener means (11) is designed to slide readily along strap loops such as to take along the straps a position that is controlled by the magnitude and the direction of the forces applied via the strap portions that connect with the fastener means (11). The harness also includes a waist belt which connects with the fastener means (11) on the rear side of the harness such as to limit the distance of said fastener means from the waist belt. The back piece is generally triangular in shape, with the top of the triangle connected to the fastener means (11), said back piece functioning to transfer load to the lower part of the wearer's back.



MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG,

PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A CHILD HARNESS

The present invention relates to a child harness of the kind defined in the preamble of
5 Claim 1.

The invention thus relates to a harness that includes a child carrying pouch which is
positioned on the front side of the harness, so as to be supported on the chest side of the
wearer, and that further includes two strap loops which pass around respective shoulders of
10 the wearer and which loops are mutually fastened by means of a fastener means on the rear
side of the harness.

The weight of the child is transferred to the wearer's back via the looped shoulder straps.

15 One drawback with known child harnesses is that the load to which the wearer is subjected
on his/her back will depend on the position of the strap fastener means on the rear side of
the wearer and also on the tension forces in those parts of the shoulder straps that connect
with the fastener means and with the fastening point respectively.

20 Adjustments to the position of the fastener means are difficult to achieve and will not only
result in a different location of the fastener means on the rear side of the wearer, but also in
a change in the tensioning conditions relating to those parts of the straps that connect with
the fastener means.

25 In those instances when a child harness is used by different persons on alternate occasions,
(by mother and father for instance), it is difficult to adjust the strap fastener means to a
position which is best for the wearer concerned at that time, with respect to the load to
which he or she is subjected.

30 Accordingly, an object of the present invention is to provide a child harness with which the
fastener means can be readily adjusted to a position that is comfortable to the wearer.

A further object of the invention is to provide child harness that has a back piece which
functions to ease the load on the wearer.

These objects are achieved either fully or partially by means of the invention.

The invention is defined in the accompanying Claim 1.

5

Further embodiments of the invention will be apparent from the depending Claims.

10

15

According to one important feature of the invention, the fastener means is able to slide along those parts of the strap loops located on the rear side of the wearer. The fastener means will thereby take a displacement position along the straps that will depend on the tension forces acting in the directions of the strap portions that connect to the fastener means. In one practical embodiment, each shoulder strap may have a thickened edge, wherein the thickenings are provided on the mutually adjacent edges of the straps on the rear side of the harness. Moreover, the fastener means may have along each of two opposite sides an undercut groove into which the edge thickening of an adjacent strap loop is able to slide. The grooves are curved, to minimise the sliding resistance of the fastener means along the edge thickenings. The fastener means is also curved conveniently between its groove edges, with the concave side of the fastener means facing towards the wearer so as not to lie against the wearer's back.

20

25

30

In one particularly preferred embodiment of the invention, the harness includes a waist belt which is connected to the fastener means by means of a back piece. The back piece will therefore set an upper limit for the distance between the waist belt and the fastener means. The back piece will preferably be flexible and therewith deformable so as to allow the fastener means to approach the waist belt when the interaction of forces in the loops promote said displacement of the fastener means. However, the back piece will preferably include a spring element that functions to stretch the waist belt and the fastener means apart by a distance that corresponds to the length of the back piece in the stretch direction. The back piece is preferably triangular in shape, with the base of the triangle extending along the waist belt and the top of the triangle connecting with the fastener means, so that the back piece will generally fill the space between the shoulder straps and the rear side of the wearer. This enables a large part of the weight of the child carried in the pouch to be applied to the wearer's back, via the back piece. Because the back piece is located in the

lower part of the wearer's back, lightening of the load on the wearer will be particularly effective.

5 The lower part of the back piece may form a separate part of the waist belt, wherewith those parts of the waist belt that connect with the back piece may be joined by fastener or coupling elements that enable the lengths of respective belt portions to be adjusted. The belt portions are suitably connected together on the front side of the wearer with the aid of coupling elements, which may be affixed to the lower parts of the strap loops. The size of the loops, or shoulder straps, may be adjustable, in which case there is provided on the rear
10 side of the loops a size adjusting element so that an end of the strap will extend down along the loop forwardly of the size adjusting element, therewith enabling the wearer to readily grip the strap ends and pull the same downwards to reduce the size of the loops.

The pouch can include a front piece whose lower portion is connected to the connection
15 region between the strap loops on the front side of the harness, wherewith upper laterally orientated fasteners on said front piece are conveniently connected releasably to respective adjacent fasteners on the loops, on the front side of the harness. The coupling elements of the waist belt may connect indirectly with one another via a further coupling element on the lower part of the front piece. The strap loops and the waist belt coupling elements may
20 both be fixedly connected to the further coupling element. Alternatively, one part of the strap loop may, however, pass through a transit opening on the coupling element and pass into a waist-belt fastener element.

25 The invention will now be described in more detail with reference to the accompanying drawing.

Figure 1 illustrates the baby harness lain out in a flat state on a flat surface.

Figure 2 illustrates a part of the harness shown in Fig. 2.

30

Figure 3 is a sectional view taken on the line III-III in Fig. 2.

Shown in Fig. 1 is a child harness that includes two looped shoulder straps 10 which are intended to pass around respective shoulders of the person wearing the harness.

The harness carries on its rear side relating to the wearer a fitting or fastener means 11 which fastens together mutually adjacent parts of the loops 10. As will be seen from Fig. 1, the mutually adjacent edges of the strap portions 14 include thickenings 15. Furthermore, it will be seen from Figs 2 and 3 that the fastener means 11 has two opposite edges that each include an undercut groove 112 which accommodates the thickenings 15 so that they can slide along the grooves 112. The edges 110 in which the grooves are formed are curved to conform with the natural curvature of the straps 14 in the region of said connection, and hence the edges and grooves of the fastener means 11 are curved with their concave sides facing away from each other. The fastener means 11 is also curved between its edges 110 so that its concave side will face towards the wearer's back and therewith exert no pressure on the wearer's spine.

Because the edge thickenings 15 are able to slide easily through the grooves 12 on said fastener means, the fastener means 11 will take along the straps 14 a position that will depend on the tensile forces acting in the longitudinal portions of the straps 14 connected by the fastener means, and also in the direction in which said forces act. The fastener means 11 will thus slide automatically to and from positions that are favourable from a loading aspect.

It will also be seen from Fig. 1 that the harness includes a waist belt which extends between two coupling elements 20 that are connected to lower portions of the loops 10, said portions being intended to be coupled on the front of the wearer. The waist belt and the shoulder loops 10 are conveniently connected by coupling elements 20 that can be mutually connected indirectly via a further coupling element 30 which carries a lower part of a front piece 13 whose laterally disposed upper portions can be connected by releasable fasteners 131 to corresponding fasteners 17 on the front parts of the shoulder loops that extend generally vertical on the chest side of the wearer.

The front piece 13 forms a child carrying pouch. It will be seen that the lowermost part of the front piece is strip-shaped and extends through a transit loop 32 on the coupling element 30 and includes a series of discrete openings 134 that can be anchored on carrier pins 35 on the coupling element 30. The strap end of the front piece may include stop means that prevents passage through the transit loop or eyelet 32.

Both strap portions of the loops 10 may be fixedly fastened to the coupling element 20. Alternatively, one part of the loop may pass through an eyelet 21 on the coupling element and merge with an end part 41 of the waist belt 40 as shown in Fig. 1. The waist belt part/the waist belt part 41 are shown connected via a respective length adjustment element 5 42 on a back piece 47 that forms part of the waist strap 40. The back piece 47 extends upwardly and supports with its upper end connected to the fastener means 11 by a coupling 49 so as to provide an upper limit for the distance between the fastener means 11 and the waist belt 40. In the illustrated case, the back piece 47 is triangular in shape so that the load on the wearer will be transferred over the surface of the back piece to the region of the 10 wearer's spine in the area between the shoulder straps 10 and the waist belt 40, beneath the fastener means 11.

The back piece 47 may comprise a flexible quilted fabric that will allow the fastener means 11 to approach the perimeter of the waist belt. In one embodiment, however, there is 15 provided a strong elastic leaf spring 48 that extends vertically between the fastener means 11 and the lower part of the back piece such as to bias the fastener means 11 towards its end position relative to the perimeter or circumferential path of the waist belt 40 with a chosen spring characteristic.

20 It will be seen that each shoulder strap or loop 10 has a size adjusting element 19 from which a strap end 18 protrudes. The adjusting element 19 is situated between the fastener means 11 and the coupling element 20 on the rear side of the harness, and the strap end 18 extends generally in a direction towards the coupling element 20 so that the free end of the strap can be readily gripped by the wearer for adjustment of the size of the loop 10.

Claims

1. A child harness that includes a child carrying pouch (13) which is positioned on the front side of the harness, so as to be supported on the chest side of the wearer, and
5 that further includes two strap loops (10) which pass around respective shoulders of the wearer, wherein the loops (10) are mutually fastened by means of a fastener means (11) on the rear side of the harness, **characterised in that** the strap (14) of each loop (10) has a longitudinally extending thickened edge (15) on the mutually adjacent edges of the loops on the rear side of the harness; and in that the fastener
10 means (11) has along each of two opposite edges (110) an undercut groove (112) which slidingly receives a respective edge thickening of the adjacent strap loops, therewith allowing the fastener means (11) to slide along the straps of the loops (10).
2. A child harness according to Claim 1, **characterised in that** the grooved edges (110)
15 of the fastener means are curved in the plane of the fastener means (11) such as to provide mutually opposite curvatures, wherein the concave sides of the curved edges face away from each other, and wherein the longitudinally extending openings of the grooves face away from each other.
- 20 3. A child harness according to Claim 1 or 2, **characterised in that** the fastener means (11) is curved between its grooved edges (110) and has its concave side facing towards the wearer so as not to clamp against the wearer's spine.
- 25 4. A child harness according to any one of Claims 1 – 3 **characterised in that** the strap loops (10) are connected together at their lower parts on the front side of the harness.
5. A child harness according to Claim 4, **characterised in that** each strap loop carries a size adjusting element (18) on the rear side of the harness beneath the fastener means (11); and in that a strap end (18) extends down forwardly from the size adjusting
30 element (19).
6. A child harness according to any one of Claims 1 - 5, **characterised by** a waist belt (40) connected to the lower parts of the strap loops.

7. A child harness according to Claim 6, **characterised in that** a back piece (47) connects the fastener means (11) to the waist belt (40) such as to limit the distance of said means (11) from the waist belt (40) in an upward direction.
- 5 8. A child harness according to Claim 7, **characterised in that** the back piece includes a length portion of the waist belt and is connected to a respective end portion (41) of said belt (40) via an adjuster (42) for adjusting the loop size of the belt (40).
- 10 9. A child harness according to any one of Claims 1 - 8, **characterised in that** the strap loops and the ends of the waist belt connect to respective mutually connectable coupling elements (20).
- 15 10. A child harness according to Claim 9, **characterised in that** the coupling elements (20) can be connected to each other indirectly via a further coupling element (30) which carries a lower part of a front piece (13) whose upper laterally orientated parts carry a fitting (131) for releasable connection to a respective fastener (17) on the front side of the strap loops (10).
- 20 11. A child harness according to Claim 7 – or -8, **characterised in that** the back piece is flexible and includes a spring (48) which strives to counteract a reduction in the greatest distance between the waist belt (40) and the fastener means (11) as defined by the back piece.

Fig. 2

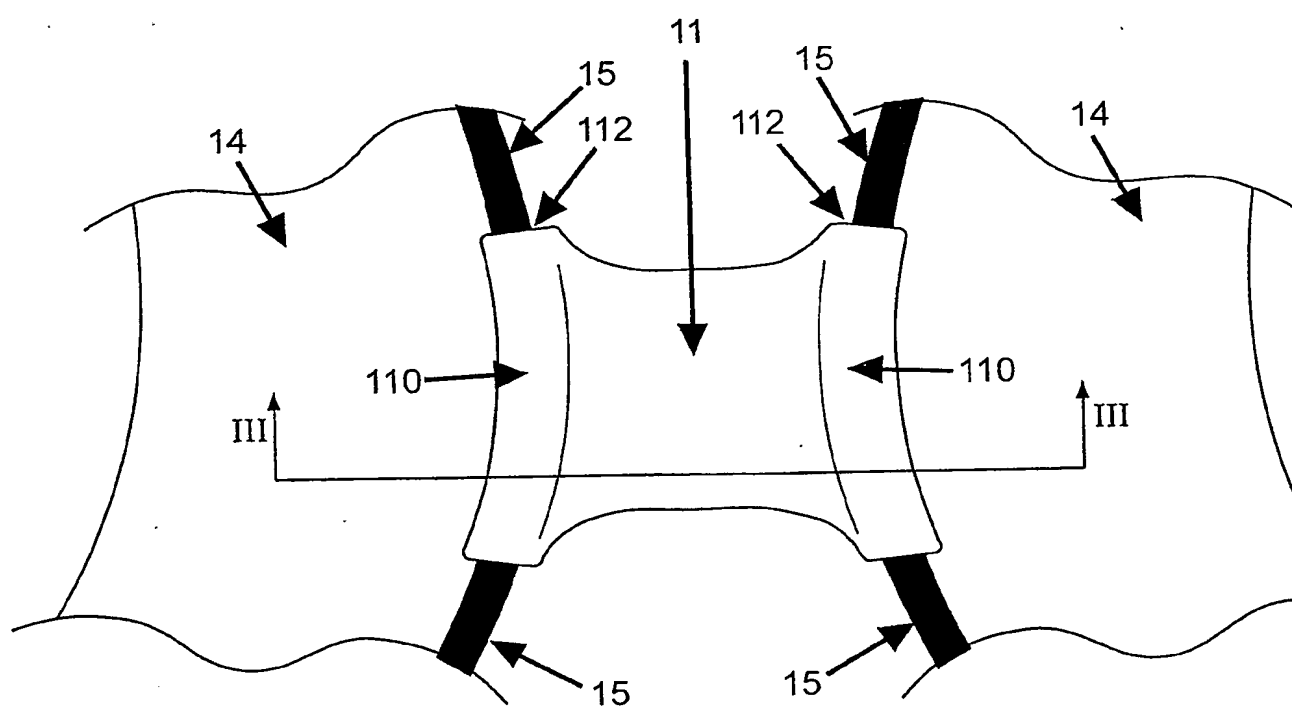
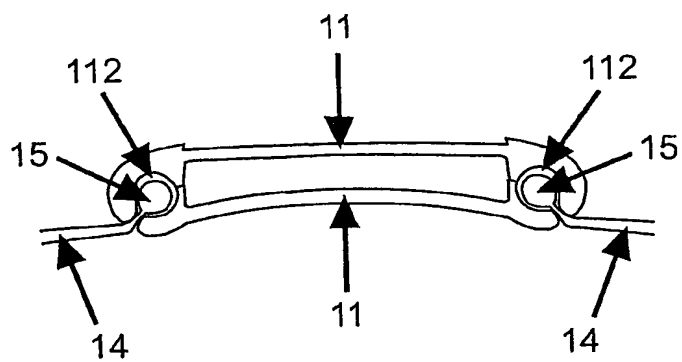


Fig. 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2003/001758

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A47D 13/02
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A47D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5632425 A (HULL), 27 May 1997 (27.05.1997), figure 2 --	1-11
A	FR 2585940 A1 (MERLET FRANCOIS), 13 February 1987 (13.02.1987), figure 1 --	1-11
A	WO 8404445 A1 (BAGLIONE, MARIE-JOSE), 22 November 1984 (22.11.1984), figure 2 --	1-11
A	EP 0752220 A1 (BABY BJÖRN AKTIEBOLAG), 8 January 1997 (08.01.1997), figure 1 -- -----	1-11

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

2 February 2004

Date of mailing of the international search report

04-02-2004

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Daniel Åberg / JA A
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

24/12/2003

International application No.

PCT/SE 2003/001758

US	5632425	A	27/05/1997	NONE		
FR	2585940	A1	13/02/1987	NONE		
WO	8404445	A1	22/11/1984	DE	3479561 D	00/00/0000
				EP	0146575 A,B	03/07/1985
				FR	2546049 A,B	23/11/1984
EP	0752220	A1	08/01/1997	AT	190205 T	15/03/2000
				DE	69606924 D,T	29/06/2000
				DK	752220 T	29/05/2000
				ES	2145990 T	16/07/2000
				GR	3033462 T	29/09/2000
				JP	9019347 A	21/01/1997
				NO	311122 B	15/10/2001
				NO	962787 A	06/01/1997
				PT	752220 T	31/07/2000
				SE	510036 C	12/04/1999
				SE	9502414 A	04/01/1997
				US	5732861 A	31/03/1998